QUICK FACTS

Gas-To-Energy At A Glance

Location

I-95 Landfill
9850 Furnace Road
Lorton, VA 22079
703-690-1703, TTY 800-818-1120

Landfill Size

500 Acres

Refuse in Place

Currently 18 million tons

Gas Collection System

350 gas wells are drilled into the landfill and connected with a network of pipes to the power plant

Generator Packages

Eight Caterpillar 3516 gas engines

Net Power Produced

6 Megawatts (MW)

Local Utility

Dominion Virginia Power

Project Life

20 Years

Project Developer

Michigan Cogeneration Systems

System Energy Savings

Equal to 600,000 barrels of oil per year or the equivalent of removing the emissions of 56,000 cars

Fairfax County Solid Waste Management Program

Mission Statement

Our mission is to protect the public interest through solid waste management planning and regulatory oversight of the county's refuse ordinances. We provide efficient and effective collection, recycling and disposal of solid waste for our customers in an environmentally responsible manner.

Solid Waste Management Program
Division of Solid Waste Disposal
and Resource Recovery
12000 Government Center Parkway, Suite 458
Fairfax, VA 22035-0060
703-324-5230, TTY 711
www.fairfaxcounty.gov/living/recycling

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This document is available in an alternative format upon request. Please call the Fairfax County Solid Waste Management Program at 703-324-5230, TTY 711. Please allow seven working days for preparation of material.

Fairfax County
Solid Waste Management Program
Promoting Clean Communities & Environmental Stewardship

PROJECT FACTS

I-95 LANDFILL GAS TO ENERGY PROJECT

A Valuable Energy Resource

Landfill gas is essentially a 50 / 50 mixture of methane and carbon dioxide, which results from the decomposition of organic matter buried in sanitary landfills. In the past, it was common practice to vent or flare the gas once it was collected. However, because of technical advancements, it is now possible to save money by utilizing landfill gas as an energy source.

Gas-To-Energy Project Overview

In December 1991, Michigan Cogeneration Systems completed construction of Phase I of the Landfill Gas-To-Energy Project. Phase I houses four Caterpillar 3516 engines.

Phase II of the Landfill Gas-To-Energy Project, a near replica of Phase I, was completed in February 1993.

These plants are solely fueled by the landfill gas produced by the I-95 Landfill. The project consumes 2,300 cubic feet per minute of landfill gas and produces 6 Megawatts (MW) of electric power, which is sold to the local utility, Dominion Virginia Power. ***This is enough electricity to serve six thousand homes.***

Collection System

Landfill gas is recovered from the I-95 Landfill through several hundred gas wells which are drilled into the landfill and connected by a network of pipes to the power plant.

A 100 horsepower vacuum system, located at the Michigan Cogeneration Systems Plant, draws the landfill gas from the wells by creating a vacuum. The gas is then boosted to a pressure sufficient for use in the power generation and compressor plant operated by Michigan Cogeneration Systems.

The gas extraction wells and the collection network are operated and maintained by the Fairfax County Division of Solid Waste Disposal and Resource Recovery.

Turn Up the HEAT

In 2005, five standard natural gas infrared heaters (3 units at 80,000 BTU's each and two units at 100,000 BTU's each) were retrofitted to use landfill gas and installed in the maintenance building of the I-95 landfill. A landfill gas line was tapped and piped through a simple treatment process to remove moisture and some compounds that are inherent in landfill gas.

After treatment, a stainless steel pipe delivers the gas to each heater where it is combusted. Each heater has its own thermostat so that comfortable temperatures can be maintained throughout the building.

About 30 cfm (cubic feet per minute) of landfill gas are used, which is the average flow from one landfill gas well. This provides an annual savings of $6,000 in fuel cost during winter months.

Landfill Gas at the Wastewater Treatment Plant

In May 1997, Michigan Cogeneration Systems and Fairfax County completed the construction of Phase III of the Landfill Gas-to-Energy Project.

The project included the construction of a three mile long gas pipeline for the transmission of landfill gas from the I-95 Landfill to the Noman Cole Pollution Control Plant (wastewater treatment plant) and a compressor/dryer station at the I-95 Landfill.

Approximately 700 cfm (cubic feet per minute) is transmitted through this pipeline to the wastewater treatment plant for use in the after-burners of the sludge incinerators. ***Savings in fuel costs are approximately $500,000 annually.***